INTRODUCTION

Statehood of Russia and its economic development over last centuries have been closely connected to resources utilization of such water reservoirs in the European part of Russia as the Barents Sea, the White Sea, the Azov Sea, the Baltic Sea, the Caspian Sea and the Black Sea (**Fig.** 1). However, we sometimes fail to realize to what extent our lives are influenced by global processes going on in nature and how much we depend on abundance of the World Ocean.

Demand for fish and sea products is increasing every day, because they establish basis of wholesome nutrition, ecologically pure pharmaceutics and a number of new technologies. Annual yield of sea products amounts to over 110 mln tons and aquaculture products constitute nearly quarter of it. The share of Russian fishery is 4.5 mln tons per year, which is far from being maximum sustainable catch of the Russian waters.

At the same time we witness exhaustion of stocks of traditional fishery and hunting objects such as fishes, whales, birds, seals. Now we face problems of overexploitation, disruption of natural reproduction and even threat of extinction of some species.

In recent years politicians, businessmen and society have become increasingly conscious of complex problems of marine ecosystems and marine resources preservation. In Russia and abroad this issue has often been discussed at scientific conferences and meetings of different levels and found its reflection in numerous publications.

Nevertheless, the need for more detailed studies, especially sea surveys, and the use of their results for development of new methods becomes really important. In the present situation of crisis, this issue comes fore as particularly acute problems of continuity of marine studies on the sufficient level and preventing experts from switching to other activities arise. It is noteworthy that a series of legislative efforts has been carried out recently in order to regulate bioresources exploitation. Their guidelines can be found in two strategic documents – the President of the Russian Federation decree N 440 from 01.04.96 «On the concept of the Russian Federation transition to the sustainable model of development» and the Russian Federation Government decision N 669 from 01.06.96 «On the measures necessary for the implementation of «The Biodiversity Convention». In accordance with the above mentioned documents all departments should cooperate with representatives of the executive power and the Academy of Science of the Russian Federation in order to elaborate agreed scheme of cooperation and meet international commitments of the Russian Federation. In addition, protection and sensible use of bioresources are regulated by Chapter 2 of the Russian Federation Shelf Law and the Russian Federation Government Decree N 1490 from 14.12.98 «On strengthening of state control over bioresources exploitation».

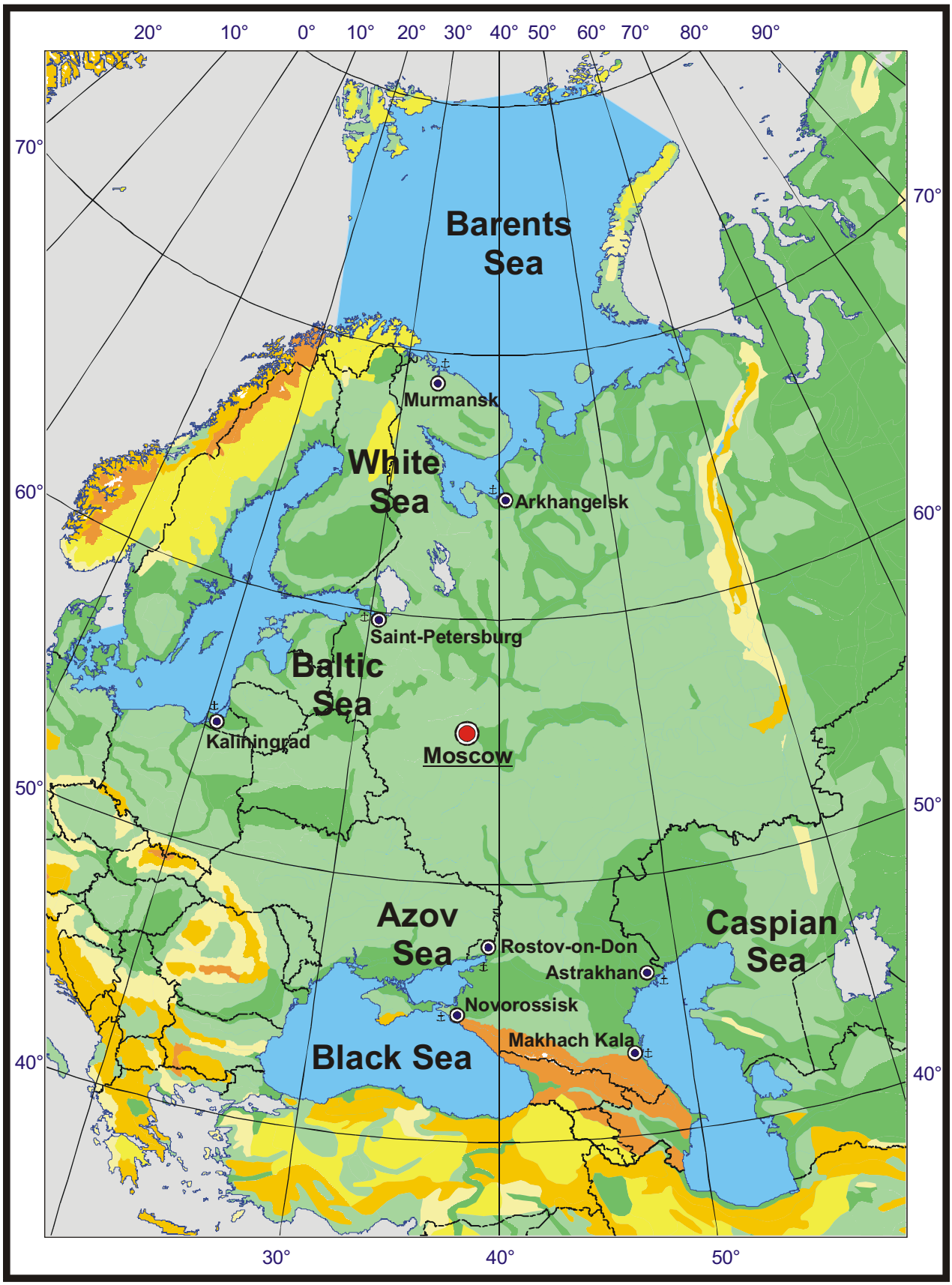

Fig. 1. European seas of Russia

The subject of this book is to summarize data, bring together different approaches to the development of marine biota and its environment at the turn of the century, to analyze reasons and biological consequences of ecological crisis of the seas in the European part of Russia, to discuss possible ways of stabilization of unfavorable trends in ecosystem dynamics and maintain their efficiency.

Another reason for creating this book was our growing concern over poor cooperation between academic science and applied sciences in attempt to develop scientific approach to aquaculture and marine biotechnology. While writing this book we used numerous materials and data gathered by different institutes and organizations listed below:

- *Murmansk Marine Biological Institute KSC RAS (MMBI)*
- *P.P. Shyrshov Institute of Oceanology, RAS (IO)*
- *Severtsev A.N. Institute of Problems of Ecology and Evolution (IPEE)*
- *Scientific Council on Hydrobiology and Ichthyology problems RAS*
- *Interdepartmental Ichthyologic Committee*
- *State Fishery Committee of the Russian Federation*
- *All-Russian Scientific-research Institute of Marine Fisheries and Oceanography (VNIRO)*
- *Polar Scientific-research Institute of Marine Fishery and Oceanography(PINRO)*
- *Caspian Fishery Scientific-research Institute*
- *Azov Fishery Scientific-research Institute*
- *JSC «Sevryba»*
- *«Murmansk Trawlers' Fleet», Ltd.*
- *State Environmental Protection Committee of the Russian Federation*
- *Scientific-research Institute of Nature Protection and Reserves*

Murmansk Marine Biological Institute KSC RAS (MMBI) has been engaged in complex sea studies in the West Arctic regions since 1935 (**Fig.** 2–4). The Azov Sea has been recently included into the scope of the Institute studies. MMBI includes some branches of applied sciences alongside profound scientific research in oceanology and biology. These branches are development and exploitation of non-traditional fishery objects, evaluation of shelf gas and oil extraction influence on marine ecosystems, and modeling of chemical and radioactive pollutants distribution in the seas. The studies resulted in the publication of over 50 monographs and collections of articles (see Appendices).

Materials collected by the authors for the report at the meeting of RAS Presidium (February 1999) formed the basis for this book. The authors express gratitude to RAS Academicians M.E. Vinogradov and D.S. Pavlov, RAS correspondent member Y.A. Zhdanov, director of *VNIRO* Dr. B.N. Kotenev for valuable advice and helpful criticism; Director General of JSC *«Sevryba»* G.V. Tishkov, Director of *PINRO* Dr. F.M. Troyanovsky, Dr. V.N.Shleinick, managers of *«Murmanrybvod»* A.V. Zelentsov, B.F. Pryshchepa for data and participation in discussions on the seas of the Northern regions; Director of *Azov Fishery scientific-research institute* Dr. E.V. Makarov, Deputy Director of *Azov Fishery Scientific-research Institute* Dr. S.P. Volovik, Department Manager of *Hydrochemical Institute* Dr. Y.A. Fedorov, Head of the Chair of *Rostov State University* Dr. Y.P. Chrustalev, Deputy Director of *«Azrybvod»* office V.E. Yegorov – for materials on the seas of the South.

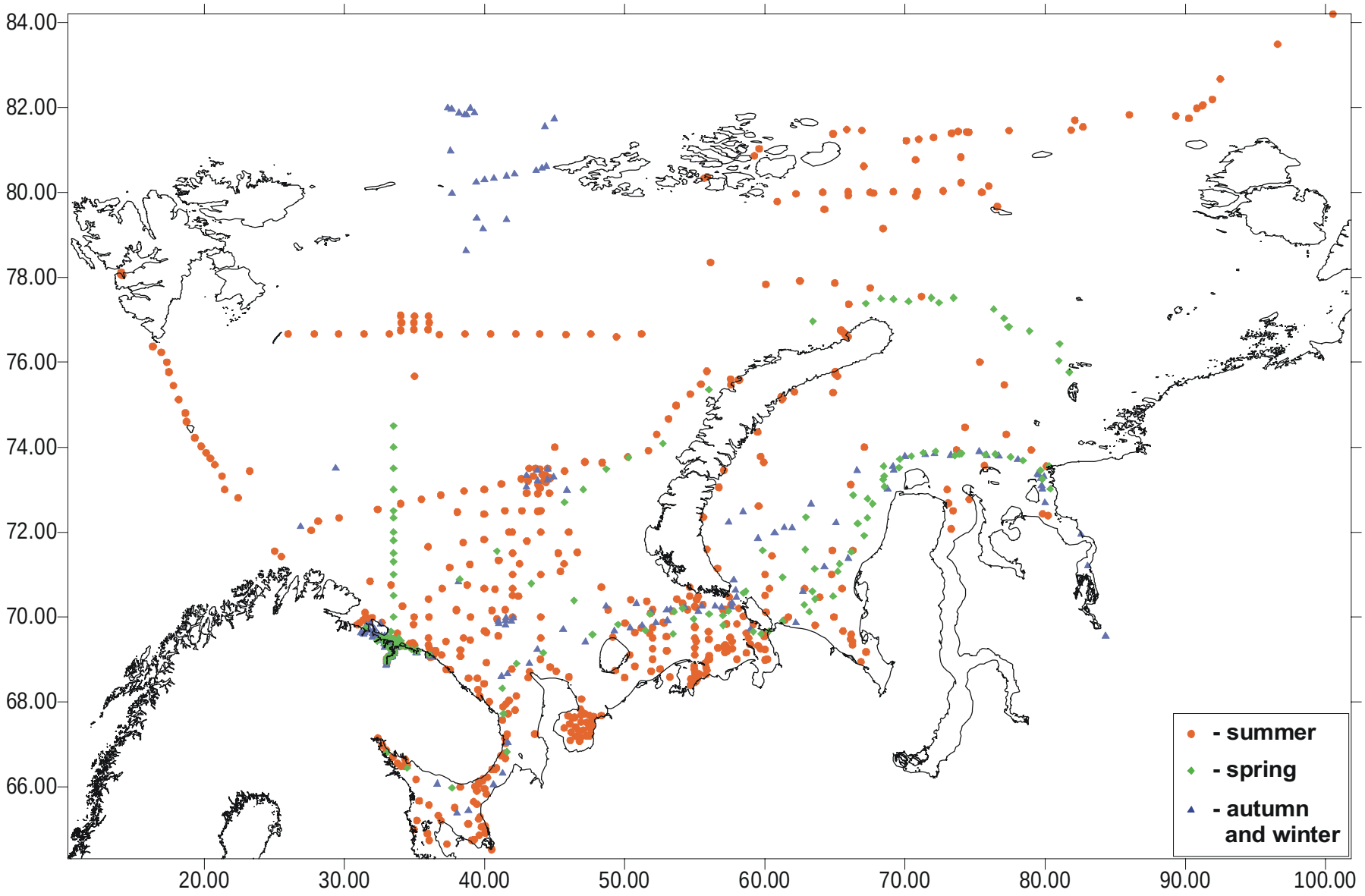

Fig. 2. Scheme of planktonic stations carried out during MMBI cruises from 1991 till 1998

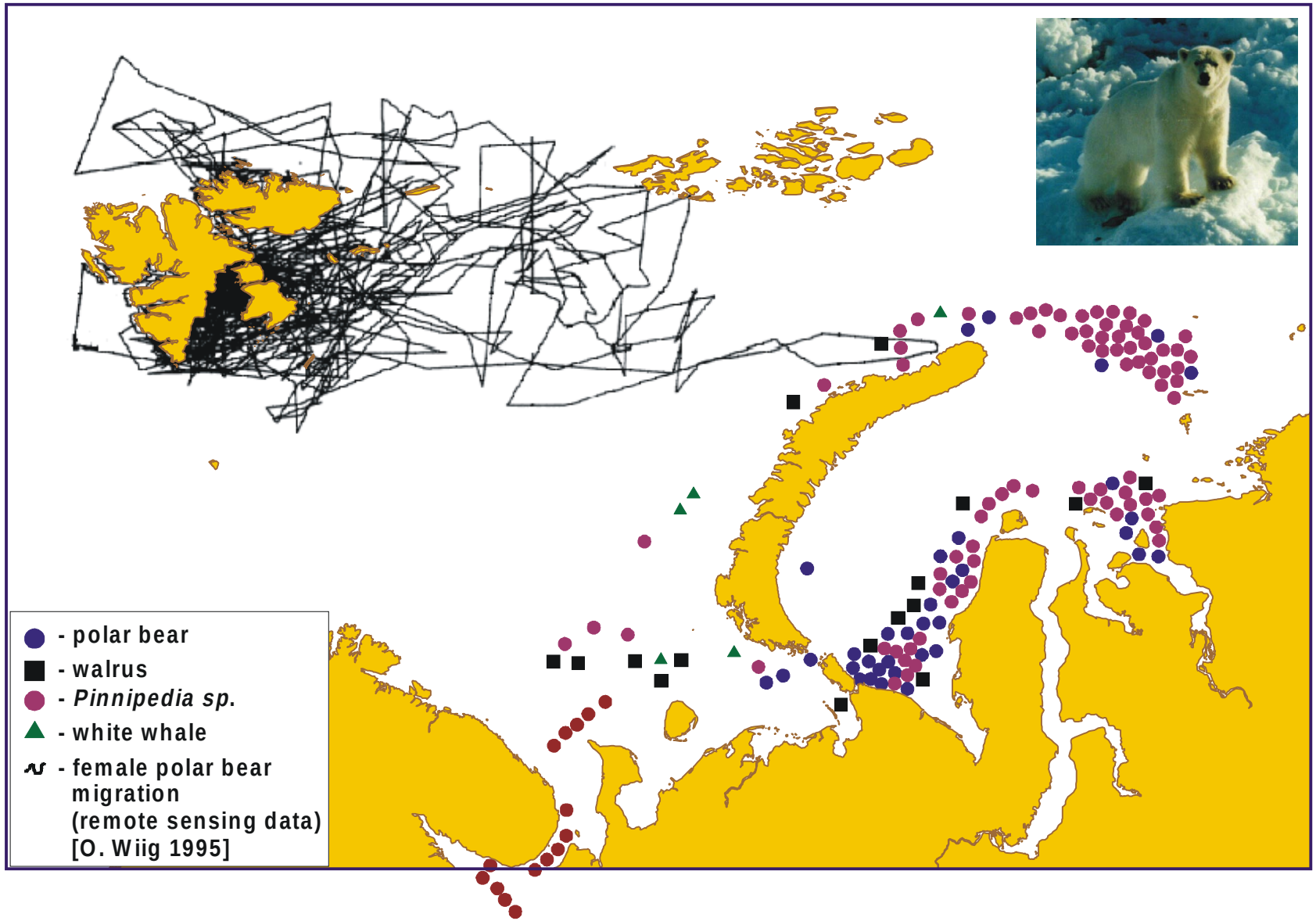

*Fig. 3. Coupling of the satellite sensing (*NPI, Norway*) and simultaneous observations from ice-breakers* (MMBI, Russia) *of the polar bear habitat in the north of the Barents and the Kara seas*

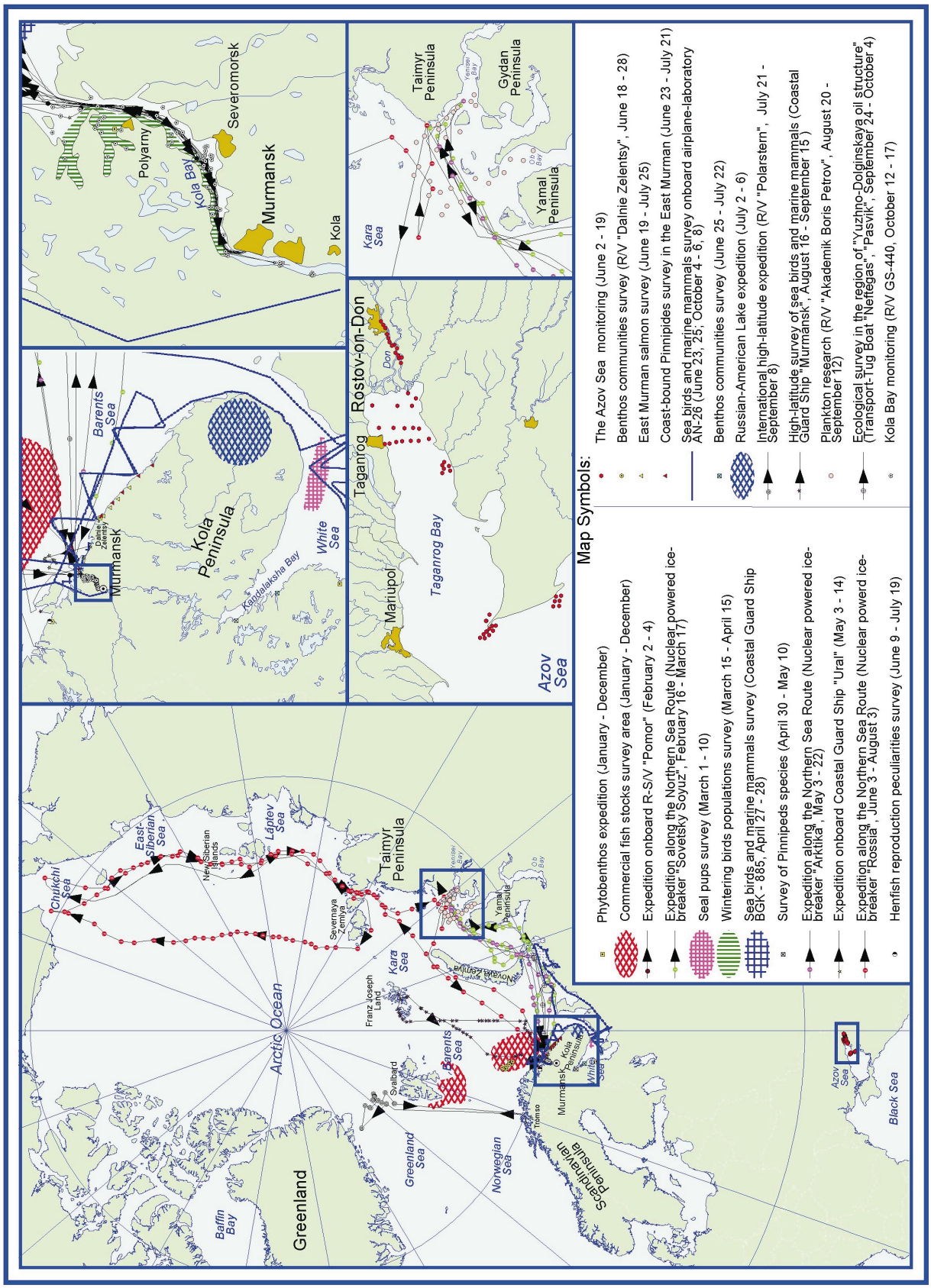

Fig. 4. Map of MMBI expeditions in 1998

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